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COMMISSION

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**BAY BRIDGE DESIGN TASK FORCE**
**ENGINEERING AND DESIGN**
**ADVISORY PANEL**
**Monday, January 4, 1999**
**9:00 a.m.**
**Joseph P. Bort MetroCenter Auditorium**
**101 Eighth Street**
**Oakland, California 94607**

Chairperson: Joseph Nicoletti
Vice Chair: John Kriken
Staff Liaison: Steve Heminger

## FINAL AGENDA

1. Welcome and introductions - Joseph Nicoletti, Chair, and John Kriken, Vice Chair

2. Approval of draft meeting record for October 9, 1998 meeting*

3. Status report on Environmental Impact Statement and geotechnical investigations - Brian Maroney, Caltrans

4. Presentation of detailed design information on recommended new eastern span - Brian Maroney, Caltrans, and TY Lin design team

   - Yerba Buena Island Transition
   - Main Span West Pier
   - Viaduct Design
   - Bicycle/Pedestrian Path
   - Oakland Touchdown and Park

5. EDAP discussion and comments

6. Other business/public comment

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* Attachment sent to members, key staff, and others as appropriate. Copies available at meeting.
** Attachment to be distributed at meeting.

**Public Comment**: The public is encouraged to comment on agenda items at committee meetings by completing a request-to-speak card (available from staff) and passing it to the committee secretary or chairperson. Public comment may be limited by any of the procedures set forth in Section 3.09 of MTC's Procedures Manual (Resolution No. 1058, Revised) if, in the chair's judgment, it is necessary to maintain the orderly flow of business.
**Record of Meeting**: MTC meetings are tape recorded. Copies of recordings are available at nominal charge, or recordings may be listened to at MTC offices by appointment.
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**BAY BRIDGE DESIGN TASK FORCE**
**Engineering and Design Advisory Panel**
**October 9, 1998 Meeting**
**Oakland, CA**

**Draft Record of Meeting**

Panel attendance

John Kriken (Vice Chair), Christopher Arnold, Bruce Bolt, Roger Borcherdt, Robert Brown, Jerry Fox, Ben Gerwick, Jeffrey Heller, Ephraim Hirsch, T.Y. Lin, Jim McCarty, Roumen Mladjov, Alexander Scordelis, Steve Thompson, and Edward Wilson.

Approval of draft meeting record for May 29 meeting

The minutes were approved as presented.

Summary of BATA recommendations and upcoming schedule of EDAP meetings

Steve Heminger of MTC summarized the bridge design recommendations and toll surcharge extension actions approved by the commission acting as the Bay Area Toll Authority (BATA) in June 1998. He also indicated that BATA's resolution authorized EDAP to continue to provide design oversight in three key areas: the Yerba Buena Island (YBI) transition, the viaduct portion of the new eastern span, and the Oakland touchdown. Finally, he reminded EDAP of its upcoming schedule of meetings to deal with these issues, culminating in the completion of bridge design work in the summer of 1999.

Presentation of detailed design information on new eastern span

Brian Maroney of Caltrans reported on the release of the draft environmental impact statement (DEIS) for the new eastern span and recent geological exploration at the site of the new bridge. Clive Endress of Caltrans and Brian Weiss of the East Bay Regional Park District reported on plans for a gateway park at the Oakland touchdown of the new bridge, including the potential incorporation of open space elements in the median of the toll plaza due to the forthcoming reconfiguration of Caltrans facilities in the median. Al Ely of the TY Lin design team reported on a scheme to reduce the number of "outrigger" bents on YBI by use of a truss system between the upper and lower decks of the bridge as it transitions to the side-by-side deck main span. Rafael Manzanarez of the design team reported on various refinements to the piers, haunched profile, and pile caps of the viaduct potion of the bridge. Keith Rivera and Caspar Mole of the design team reported on the architectural treatment of other elements of the viaduct, including the light standards, bicycle/pedestrian path, and railings.

EDAP discussion and comments

After a question and answer period with Caltrans staff and members of the design team, Vice Chair John Kriken invited panel members to make individual comments on the detailed design information presented at the meeting, which are summarized as follows:

Jerry Fox indicated that the peer review panel had met and is satisfied with progress on seismic safety issues to date, although the issue of uplift of the main span's west pier had not yet been addressed. He also commented that he didn't like the position of the roadway light standards on the inside of the bridge decks.

Bruce Bolt restated the importance of ground motion evaluation of the new span, and also commented that future EDAP agendas should focus on specific design issues or problems rather than a general review of progress.

Jeffrey Heller stated that the gateway park at the Oakland touchdown, including the Caltrans median property, constituted a spectacular opportunity and he proposed a limited design competition to develop a master plan for the area. He also stated that the main span's east pier should have a pile cap for each pier as does the rest of the viaduct span instead of a single pile cap for both piers as shown in the model. He disliked the truss solution to the YBI "forest of columns" problem and recommended that the design team examine other solutions. Finally, he recommended that the team reduce and simplify the number of vertical above-deck elements (light standards, railings, etc.) on the viaduct span, perhaps by concentrating such elements at each pier.

Vice Chair John Kriken expressed his support for the design continuity between the main span and viaduct portions of the bridge. He also suggested that the design team explore tapering of the piers to improve their appearance.

Ephraim Hirsch said he would have preferred a competition between a steel and concrete viaduct as proposed by EDAP, instead of the selection of concrete as recommended by BATA. He stated that the viaduct piers still need much improvement, and he suggested that EDAP members should participate more actively in the design process instead of just reviewing progress at quarterly meetings as outlined on the schedule.

Christopher Arnold agreed that the Oakland touchdown park was a terrific idea. He also supported simplifying the vertical elements above deck on the viaduct span so that the horizontal continuity of the "white line" from the main span to the Oakland shore could be emphasized. To further emphasize this point, he suggested that the design team consider a different color or treatment of the concrete piers. He further expressed concern about the "miniaturization" of the main span tower in so many other design elements of the bridge such as the viaduct piers and light standards.

Edward Wilson also opposed the truss solution to the YBI transition and instead suggested that the team should consider double-decked two column bents at the location. He also asked for any written reports available on site analysis and seismic performance issues associated with the viaduct spans.

Roumen Mladjov indicated his preference for a steel viaduct with span lengths greater than 160 meters. He also requested written information on seismic analysis of the viaduct spans.

Robert Brown said he thought the YBI transition problem could not be solved until the issue of whether new on/off ramps are to be included has been settled. He expressed support for the gateway park and for reducing the number of vertical elements in the railings to improve motorist views.

Roger Borcherdt asked for a presentation at a future EDAP meeting on the variations in ground motions along the viaduct spans and the resulting seismic performance of the spans. He also expressed support for simplifying the light standards and railings to avoid distracting motorists.

T.Y. Lin referenced the letter submitted by Terry Roberts, Director of Public Works for the City of Oakland, which criticized the lack of progress in the viaduct design.

Ben Gerwick also opposed the truss solution to the YBI transition problem and suggested the use of temporary columns during construction. He also stated that he felt the design team had done excellent work on the viaduct pier shafts and girders.

Alexander Scordelis also expressed opposition to the truss proposal at the YBI transition and support for BATA's recommendation of a concrete viaduct.

Jim McCarty agreed with other panel member comments stressing simplicity in the design of the light standards, railings, and other features of the viaduct spans. He also questioned how the gateway park would be paid for.

Public comment

The following members of the public made comments:

Diane Tannenwald - expressing the City of Oakland's concerns about the viaduct design
Helaine Prentice - expressing the Oakland Landmark Board's viaduct design concerns
Ken Bukowski - questioning why rail access to the new span wasn't discussed

# ROSTER
## Engineering and Design Advisory Panel
## Bay Bridge Design Task Force

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*Note: The Engineering and Design Advisory Panel of the Bay Bridge Design Task Force is comprised of representatives from the following organizations (in some instances serving on more than one panel):*

- American Institute of Architects
- American Society of Civil Engineers
- Bay Conservation and Development Commission Design Review Board
- Bay Conservation and Development Commission Engineering Criteria Review Board
- Caltrans Peer Review Panel
- Caltrans San Francisco-Oakland Bay Bridge Review Panel
- Caltrans Seismic Advisory Board
- Structural Engineers Association of Northern California

**CALTRANS SEISMIC ADVISORY BOARD**

December 30, 1998

The Honorable Barbara Boxer
U.S. Senate
1700 Montgomery Street, Suite 240
San Francisco, CA 94111

**RE: Seismic Safety of the San Francisco-Oakland Bay Bridge**

Dear Senator Boxer:

As members of the Caltrans Seismic Advisory Board (SAB), we would like to direct your attention to a serious and important life safety issue concerning delays in the planning, design, and construction of the new east bay spans of the San Francisco-Oakland Bay Bridge (SFOBB) and we respectfully request your assistance. Since the devastating 1989 Loma Prieta earthquake, the California Department of Transportation (Caltrans) has been working with academia and the private sector to develop an engineering strategy on how to protect the Bay Bridge when the next major earthquake strikes. Thanks to that cooperation, great strides have been made in expanding knowledge and technology applicable to the seismic design of such bridges.

The eight member SAB was constituted by the State of California following the 1989 Loma Prieta earthquake to review and advise Caltrans on seismic safety and policy issues. It was formed as a direct result of the Governor's Board of Inquiry following the 1989 Loma Prieta earthquake and recommendations made by that board in its report "Competing Against Time" enclosed herewith. The members of SAB consist of specialists in seismology, geotechnical engineering, and structural engineering from the practicing earthquake engineering community and academia. The SAB has closely followed and advised Caltrans since the Loma Prieta earthquake on important seismic safety related policy and procedural issues.

In a presentation to the SAB on December 15, 1989 on the status of the new east bay spans of the SFOBB, we were advised about project delays caused by the US Navy refusing to grant permission for soil explorations on and near the tip of Yerba Buena Island which are on the critical path for design completion of the new bridge.

The proposed soil explorations have no impact on any existing structures or facilities. The drilling is critical, however, in providing the technical data needed for the design and construction of a replacement structure along the identified northern alignment.

This northern alignment was arrived at after over three years of project studies by Caltrans and a detailed review by the 35 member Engineering Design Advisory Panel (EDAP) for the Metropolitan Transportation Commission (MTC). MTC, which is the transportation planning organization for the San Francisco Bay Area, has recommended this northern alignment as the best alternative.

The Seismic Advisory Board is very concerned with any delays, short or long, on such an important project to the citizens and economy of California. Such impediments undoubtedly will jeopardize public safety.

We, the members of the Seismic Advisory Board, remain committed to keeping this critical public safety project on track. Therefor, any assistance you can provide toward obtaining the Navy's permission to proceed with the needed soil explorations would be greatly appreciated.

Sincerely yours,

Bruce A. Bolt, Professor Emeritus
University of California, Berkeley

Joseph Nicoletti, Structural Engineer
URS Consultants, San Francisco

John F. Hall, Professor
California Institute of Technology

I.M. Idriss, Professor
University of California, Davis

Alexander C. Scordelis, Professor Emeritus
University of California, Berkeley

Frieder Seible, Professor
University of California, San Diego

F. Robert Preece, President
Preece, Goudie & Issa, San Francisco

Joseph Penzien, Chair SAB
Professor Emeritus
University of California, Berkeley

Enclosure Competing Against Time

C: William Cassidy, Jr., U.S. Navy
Kenn Parsons, U.S. Navy
James Van Loben Sels, Caltrans
James E. Roberts, Caltrans
Brian H. Maroney, Caltrans
Thomas J. Post, Caltrans
Dennis Mulligan, Dist 4, Caltrans
Steve Heminger, MTC
Gray Davis, CA Governor-Elect

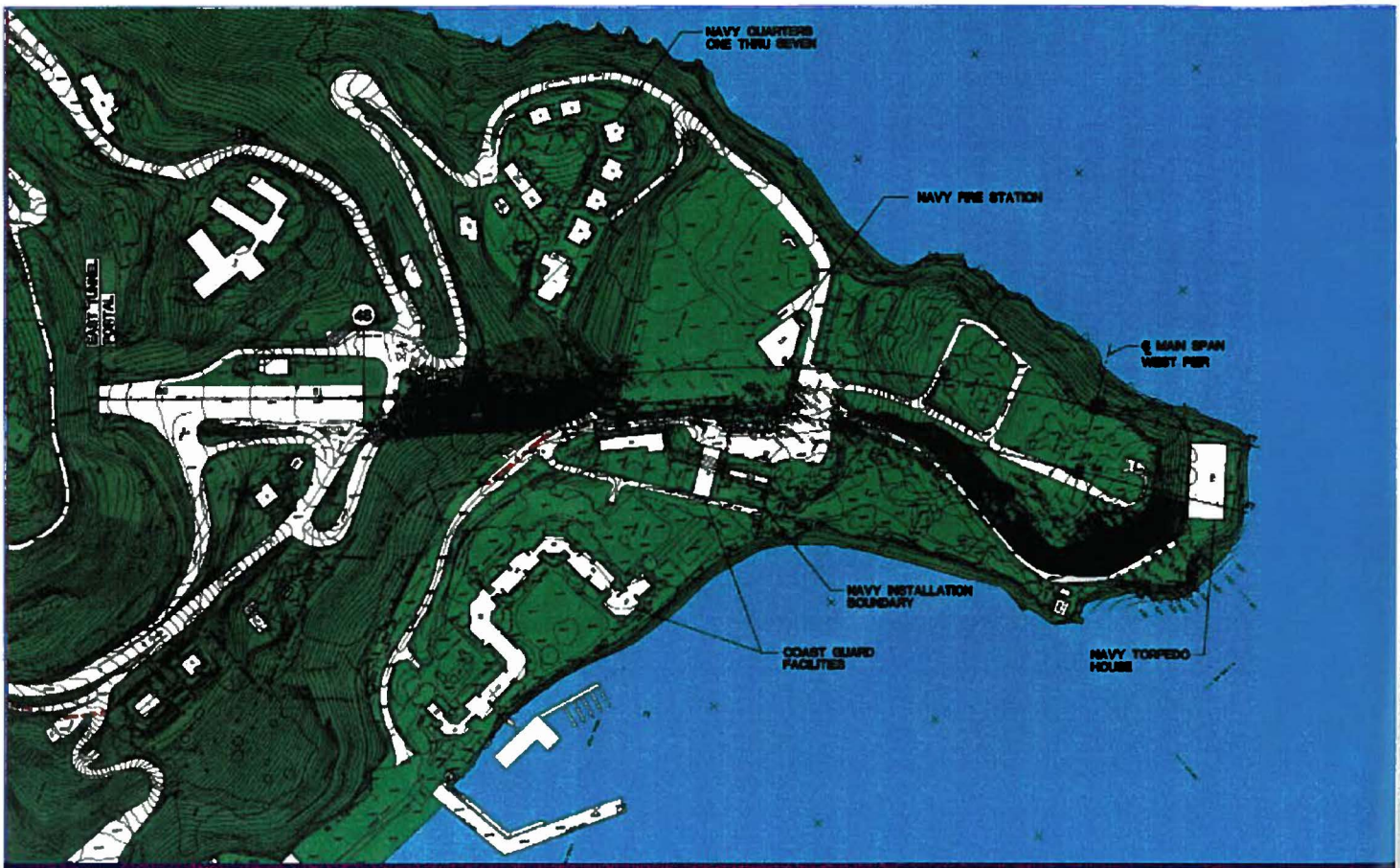
# YERBA BUENA ISLAND TRANSITION STRUCTURE

## OBJECTIVES

- MINIMIZE IMPACT ON EXISTING FACILITIES/ENVIRONS
- MAINTAIN EXISTING TRAFFIC DURING CONSTRUCTION
- MAINTAIN EXISTING RAMPS (EXCEPT EB ON-RAMP)
- PROVIDE SAFE HIGHWAY GEOMETRICS
- PROVIDE RELIABLE SEISMIC PERFORMANCE
- PROVIDE OPTIMUM AESTHETICS
- CONTROL CONSTRUCTION COST
- ALLOW FOR FUTURE RAMP ADDITIONS
- EXISTING FEATURES

## EXISTING FEATURES

The YBI transition structure extends over a picturesque but rugged portion of Yerba Buena Island that presents a number of structural and aesthetic challenges. It is proposed to retain the existing viaduct structure for a distance of about 170 m east of the easterly portal of the YBI tunnel; beyond this point (viaduct Bent 48) the existing bridge will be removed as indicated in Figure 1. It is necessary to retain this portion of the existing viaduct in order to accommodate traffic during construction of the transition structure; this portion of the existing viaduct can be widened or modified but cannot be reasonably raised or lowered. East of viaduct Bent 48 the terrain slopes sharply dictating the use of variable column heights ranging from 5 m to 50 m. There are relatively few roadbeds in this region of the island and those that do exist are circuitous and steep. In general the area to the north of the transition structure is vacant US Navy property with some historic (or potentially historic) buildings most notably quarters one through seven and the former torpedo house; the area to the south of the transition structure is typically occupied US Coast Guard facilities. The sections below




EXISTING FEATURES, FIGURE 1

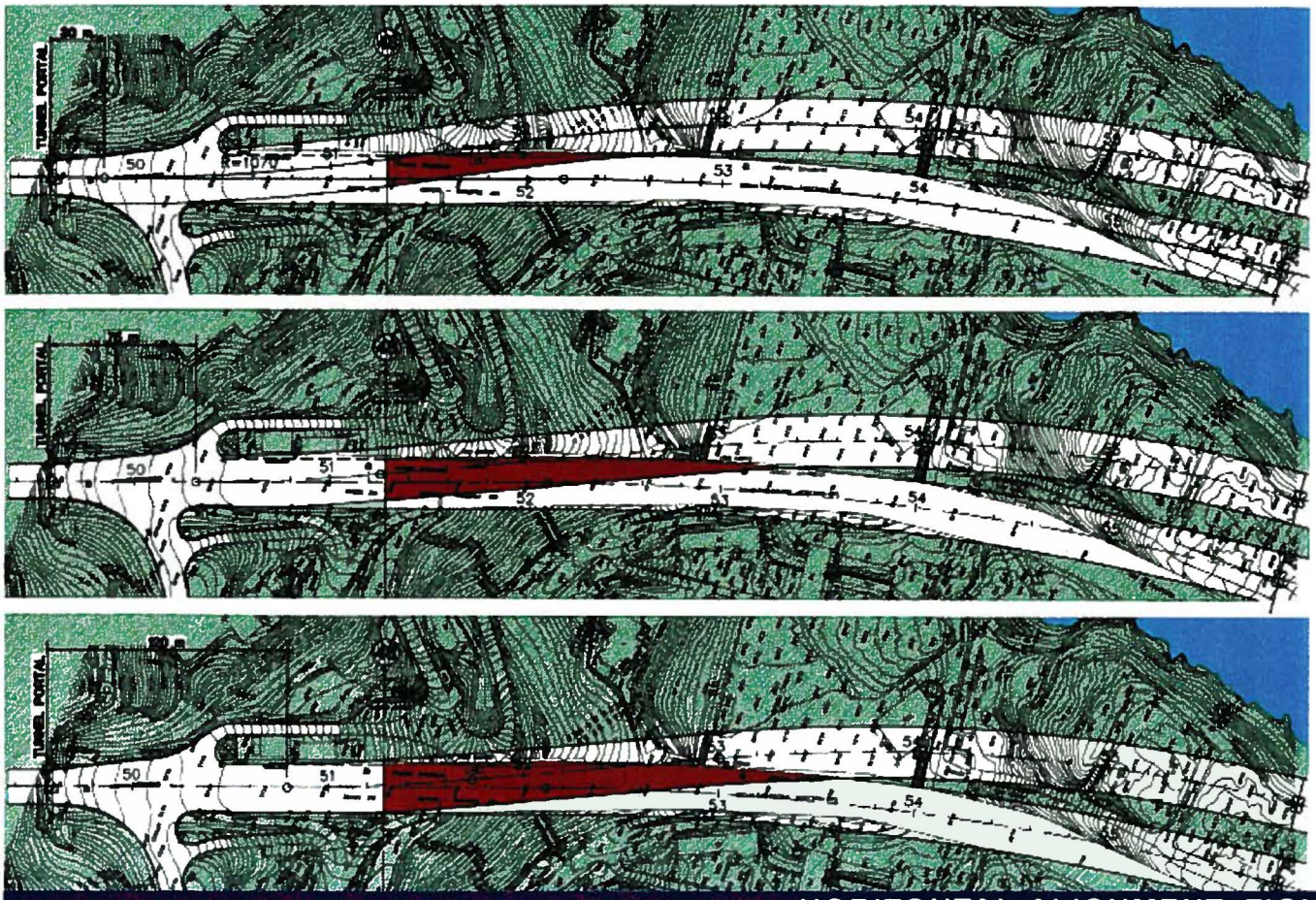
address some of the constraints in the development of the structural arrangement of the transition structure.

## HORIZONTAL ALIGNMENT

In July 1997, EDAP and the Design Task Force recommended that the new bridge design be built on an alignment north of the existing bridge, with two parallel separated decks. The parallel separation between the decks needs to be achieved in the distance between the easterly portal of the YBI tunnel and the beginning of the main span; the length of this transition zone is currently about 640m.

Since it is desired to provide for a design speed of 100km/hr. (62mph), minimum curve radii in the transition zone should be in the range of 900 to 1070m in order to maintain reasonable superelevation rates along the structure. The larger radius is preferable in the vicinity of the existing viaduct in order to limit the amount of overlay that must be placed on the viaduct to achieve the superelevation.

The point where the divergence between the WB and EB roadways begins has a significant impact on the structure arrangement. As illustrated by Fig 2, the closer the beginning of the divergence is to the tunnel portal, the less the new WB roadway overlaps the new EB roadway. In the overlap area (shaded area), the WB structure cannot be supported by columns directly below and must be supported by outrigger type bents or other means; the appearance is further aggravated by the fact that as the overlap area extends eastward, the outrigger bent




HORIZONTAL ALIGNMENT, FIGURE 2

columns become taller and, thus, more visible. The proposed beginning of the divergence is approximately 120m from the tunnel portal; this location was deemed necessary to avoid impacting the angle of sight of drivers entering along the existing WB on-ramp.

## STRUCTURE DEPTH VARIATION

The preliminary design of the East Spans has concluded that the optimum superstructure depth for the skyway (non-haunched sections) and the main span is about 5.5m. To create an aesthetically pleasing transition, the structure depth tapers from this 5.5m depth to 1.6m in depth where it joins the existing viaduct (Viaduct Bent 48) as shown in Fig 3 (exaggerated scale). The structure depth of the upper (WB) level of the existing viaduct is about 1.6m, which provides a vertical clearance of about 5.9m above the lower level (EB) roadway. The vertical clearance between the new WB and EB structures decreases as these structures extend eastward until it reaches the minimum acceptable clearance of 5.1m. It is possible to increase the structure depth of the new WB roadway adjacent to the viaduct, however, a sudden constriction in vertical clearance is considered undesirable from the drivers' perspective and from the aesthetic viewpoint. The superstructure depth of the EB roadway cannot be increased near the viaduct without impairing the vertical clearance over Treasure Island/Macalla Road.


RESTRICTED COLUMN LOCATIONS, FIGURE

## RESTRICTED COLUMN LOCATIONS

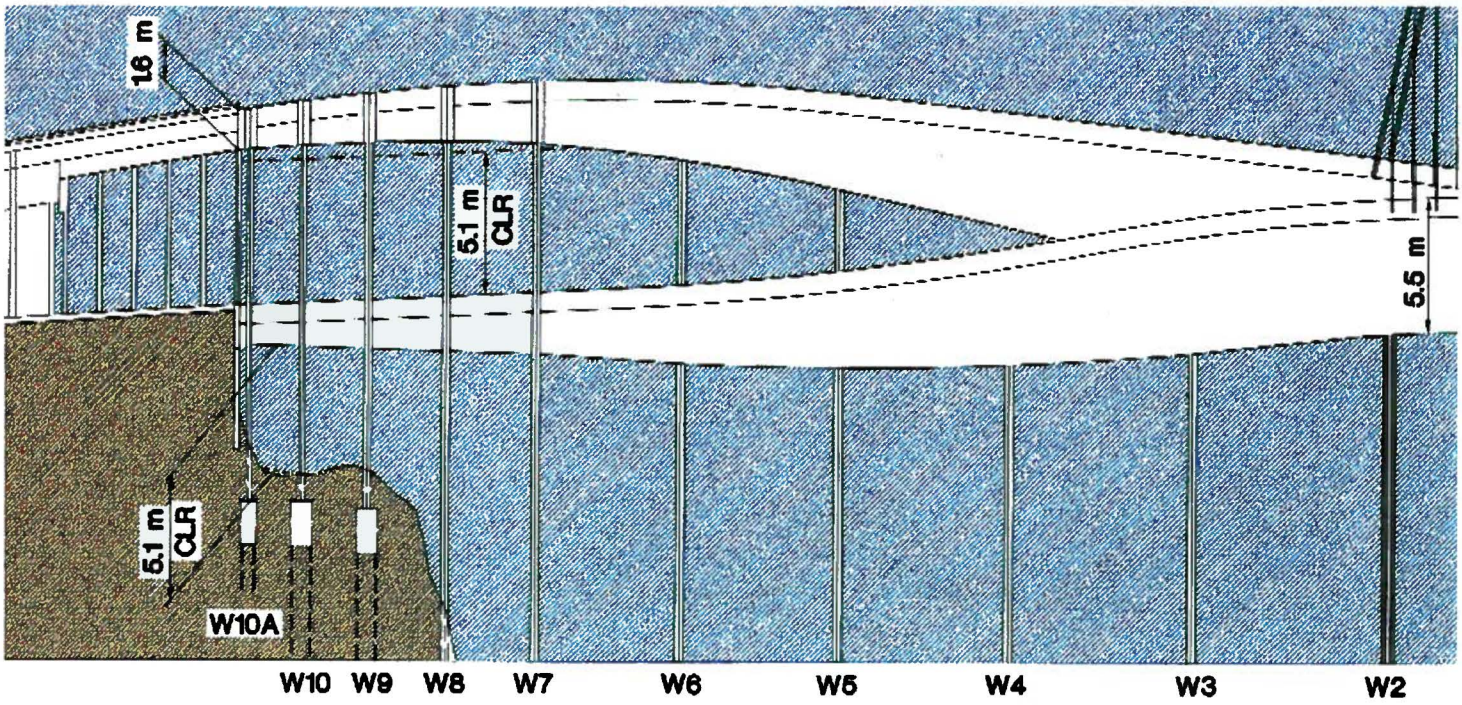
Column locations along the proposed alignment of the Transition Structure are influenced most significantly by two existing restrictions (see Figure 4): (1) the historic area surrounding vacant Navy Quarters 1 through 7; it is desired to keep foundations out of this area, and (2) the vacant Navy Fire Station Building 213; it is desired to avoid impacting the use of this facility. In combination, these two restrictions limit the span arrangement for the Transition Structure; if either of these restrictions is removed, one column could be eliminated from both the WB and EB structures.

The existing Treasure Island/Macalla Road also impacts column placement but to a lesser degree since this road can to some extent be realigned.

## EASTBOUND ON-RAMP INFLUENCE

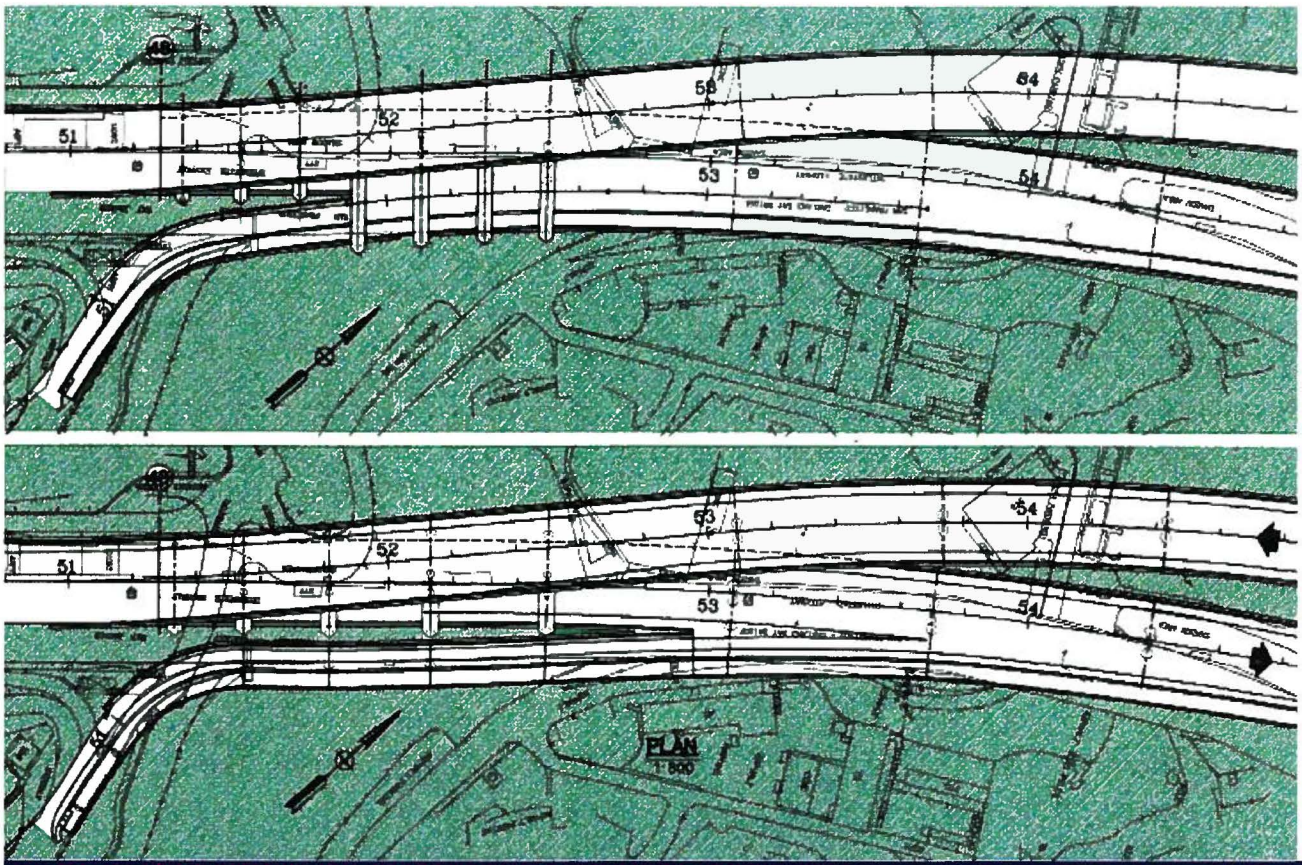
As part of the project, a new EB on-ramp is provided along the southerly side of the new transition structure. To accommodate this ramp the EB structure widens from a point 34 m west of the west main span pier toward the existi viaduct. The beginning point this widening is the location whe the steel deck section of the ma span terminates and the concre deck section of the transitic structure begins. To extend th widening further eastward wou impact the superstructure design the main span and, in particul the anchorage zone for the ma cables.

It is desired that the new EB o ramp meet current geometr design standards, this in tu necessitates that the ramp remai joined to the EB structure until it well within the area where the W

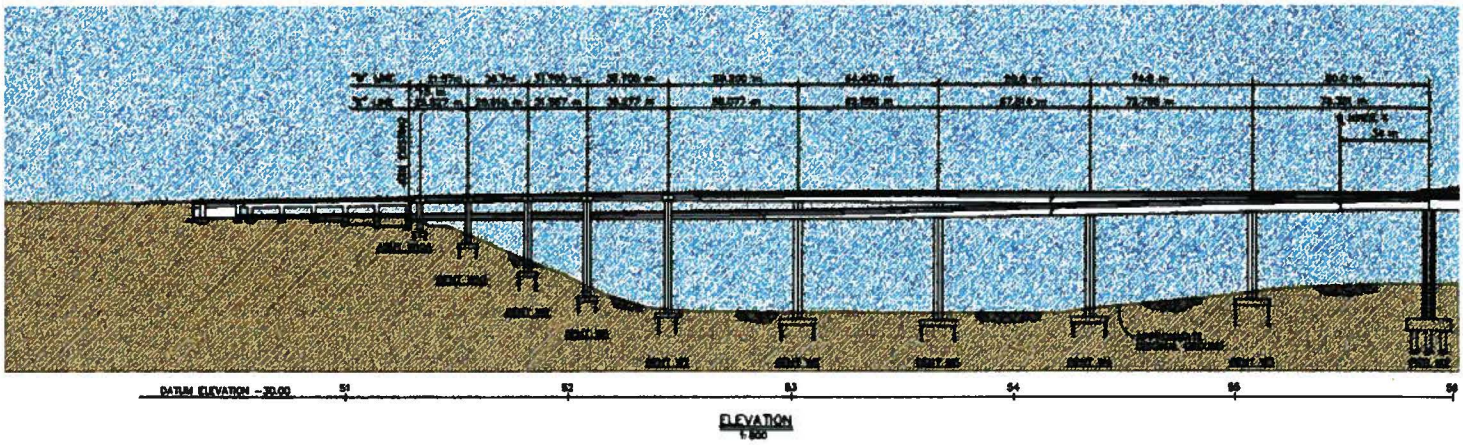



(EXAGGERATED VERTICAL SCALE)

**STRUCTURE DEPTH VARIATION, FIGURE 4**




**EB ONRAMP INFLUENCE, FIGURE 5**



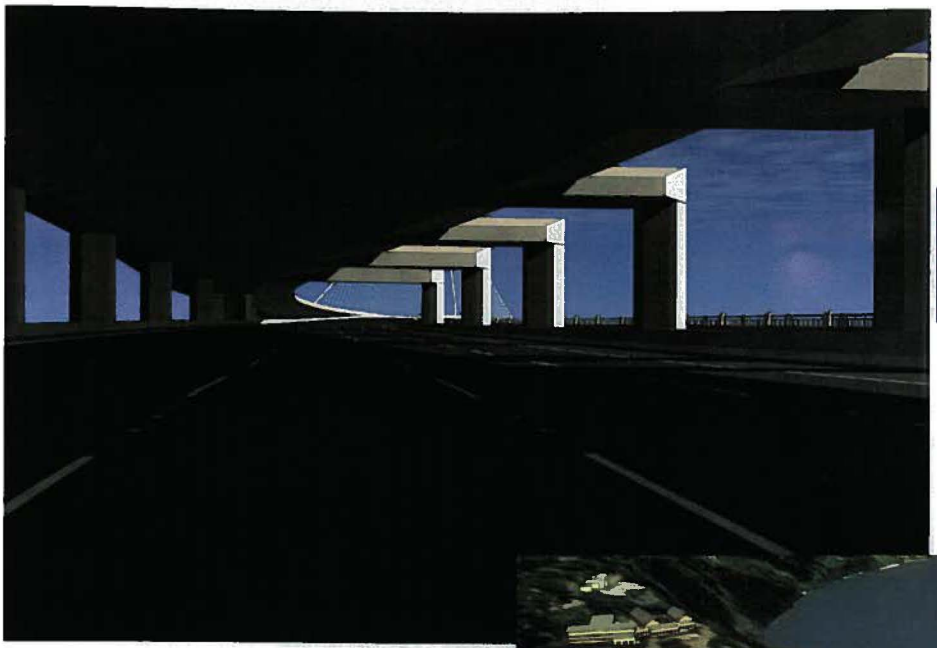


PROPOSED ARRANGEMENT, FIGURE 6

structure and EB structure overlap, as indicated in the upper portion of Figure 5. In this region the overhead beams for the outrigger bents must span across the ramp; this increased span reduces their load-carrying capacity and requires closer spacing for the outrigger bents.

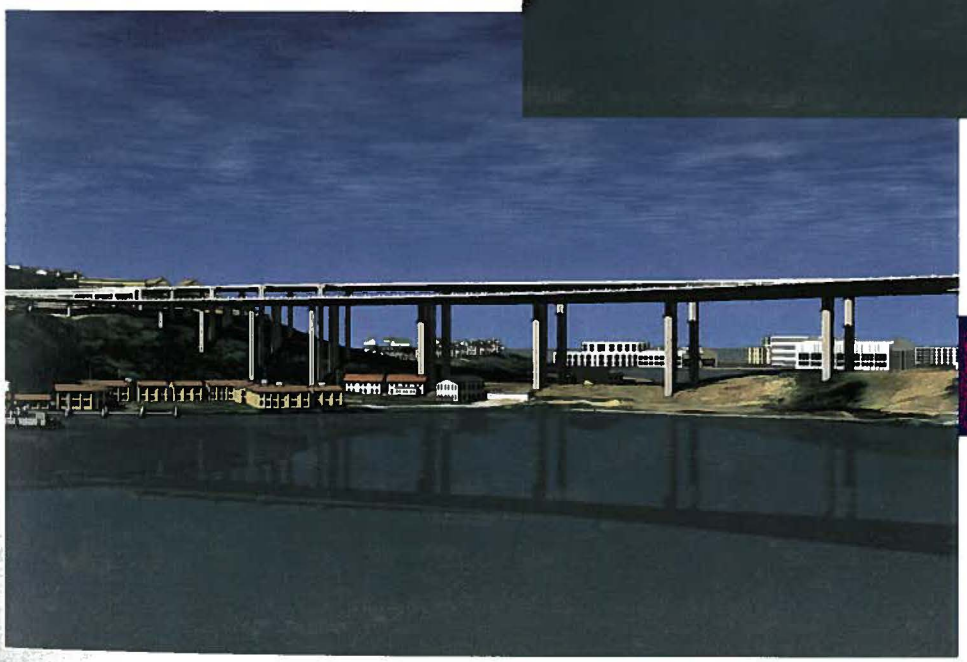
Recently the possibility of utilizing a non-standard ramp entrance has been investigated as shown in the lower portion of Figure 5. This configuration reduces the span length of the outrigger bent beams and permits a reduction in the number of bents.

YBI TRANSITION STRUCTURE (VIEW FROM ABOVE) FIGURE 7

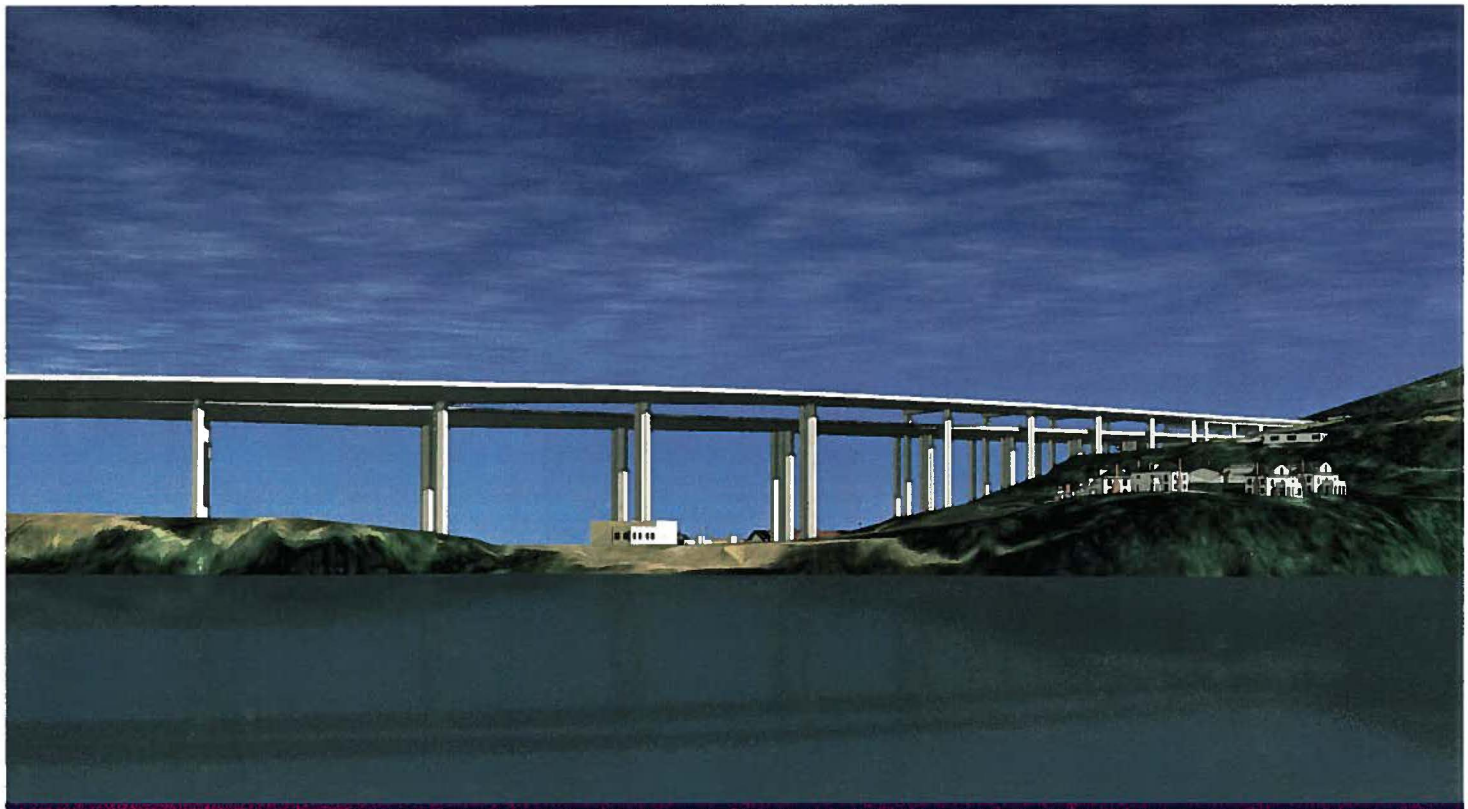


YBI TRANSITION STRUCTURE
(VIEW ON EB ROADWAY)
FIGURE 8

YBI TRANSITION STRUCTURE
(VIEW FROM SOUTH)
FIGURE 9



YBI TRANSITION STRUCTURE
(VIEW FROM SOUTH)
FIGURE 10



YBI TRANSITION STRUCTURE (VIEW FROM NORTH), FIGURE 11

YBI TRANSITION STRUCTURE (VIEW FROM NORTH), FIGURE 12

METROPOLITAN
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December 16, 1998



The Honorable Willie L. Brown, Jr.
Mayor, City and County of San Francisco
401 Van Ness Avenue
San Francisco, CA 94102

Dear Mayor Brown,

Thank you for your letter of December 7, 1998 regarding the passage of four local advisory measures regarding passenger rail service on the San Francisco-Oakland Bay Bridge.

As you know, MTC's design review process for the new eastern span of the Bay Bridge has been governed by the terms of Senate Bill 60 (codified as Section 188.5 and Section 31000 et seq of the Streets and Highways Code), which was signed into law by the governor in August 1997. These provisions were subsequently amended by Assembly Bill 2038, which the governor signed in June 1998. The law establishes a number of parameters for the new eastern span design that are relevant to your request regarding passenger rail service:

- The roadway in each direction will consist of five traffic lanes each 12 feet wide, with two shoulders each 10 feet wide for each direction;
- The cost of the new bridge is defined in statute ($1.285 billion) and is paid for through a combination of state funds and a $1 toll surcharge on Bay Area bridges which the legislation enacts; and
- MTC can extend the toll surcharge to pay for four design "amenities": a cable-supported main span, relocation or replacement of the Transbay Terminal, bicycle/pedestrian access on the new east span, and bicycle/pedestrian access on the existing west span.

In other words, the law distinguishes this seismic safety project from a typical transportation improvement project in two significant respects. First, the new eastern span must have the same capacity of traffic lanes as the existing bridge. Second, passenger rail service is not included as an eligible design "amenity" on the new bridge.

The language of the four advisory measures ("reduce regional traffic congestion, promote regional mass transit use") and your letter's request that "the current design work for the bridge should cease" are inconsistent with the statutory mandate for a seismic safety replacement project described above. The current design work on the new eastern span is approximately 50% complete and has cost the taxpayers $40 million. To start anew with a substitute design would entail considerable cost and delay. Moreover, including rail service on the bridge and its accompanying approach structures in San Francisco and the East Bay would require substantial new funding and additional legislative action as well. All of this would take time and cost money.

We believe we are compelled by state law to continue to press forward with the current design in order to reduce the risk that a major earthquake will destroy the existing east span before a replacement can be built. Within the limits of state law, the new eastern span is being designed to accommodate passenger rail service at some future date by strengthening certain supporting deck elements beneath the shoulders, or breakdown lanes, on the new span. Thus, the new span will have both the strength and the space to accommodate future rail service without taking any traffic lanes out of service. Therefore, the constraint on initiating rail service across the Bay Bridge will not be the design of the new eastern span, but rather the financial and engineering challenges of accommodating such service on the existing western span, in downtown San Francisco, and in Oakland and conceivably other East Bay communities.

In parallel with the current design process for the new eastern span, and to be responsive to your request for a study of passenger rail options in the Bay Bridge corridor, we propose to conduct an analysis of the following three options:

1. Improve existing services -- As you know, the Bay Bridge corridor already is served by multiple transit providers including BART, AC Transit, and the Alameda and Vallejo ferries. We believe that the first option to examine should be improvements to these existing services that can be implemented within the next few years.

2. On bridge rail service -- As noted above, the major challenges to instituting rail service on the Bay Bridge are the physical and engineering constraints of the Yerba Buena Island tunnel, existing western span, and the approaches at either shore. These constraints are worthy of serious examination.

3. Separate rail guideway -- A clear alternative to the daunting engineering challenge of including rail service on the Bay Bridge itself would be a separate rail bridge or tube in the same vicinity. Such an alternative was examined in MTC's 1991 Bay Crossing Study, and we would propose to update and enlarge upon that analysis as appropriate.

We look forward to discussing these and any other relevant study options with you and your staff at your convenience. At the same time, however, we must keep the new eastern span seismic safety project on schedule for completion at the earliest possible date.

Sincerely,

James P. Spering
Chair

cc: James W. van Loben Sels, Caltrans

STATE OF CALIFORNIA—BUSINESS, TRANSPORTATION AND HOUSING AGENCY

**DEPARTMENT OF TRANSPORTATION**
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| To Steve Heminger | From Denis Mulligan |
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| Co. | Co. |
| Dept. | Phone # |
| Fax # | Fax # |

December 28, 1998

Mayor Shirley Dean
City of Berkeley
2180 Milvia Street
Berkeley, CA 94704

Mayor Elihu M. Harris
City of Oakland
One City Hall Plaza
Oakland, CA 94612

Mayor Ken Bukowski
City of Emeryville
2200 Powell Street
12th Floor
Emeryville, CA 94608

Mayor Willie L. Brown, Jr.
City of San Francisco
401 Van Ness Avenue
Room 336
San Francisco, CA 94102

Mayor-Elect Jerry Brown
City of Oakland
One City Hall Plaza
Oakland, CA 94612

Dear Mayors and Mayor-Elect:

Thank you for your letter of December 7, 1998, regarding the passage of four local advisory measures regarding passenger rail service on the San Francisco-Oakland Bay Bridge.

The Draft Environmental Impact Statement (EIS) for the San Francisco-Oakland Bay Bridge (SFOBB) East Span Seismic Safety Project was released to the public on September 24, 1998. The comment period for this Draft EIS closed on November 23, 1998. The purpose of this project is to address the serious seismic deficiencies of the existing structure. Adding trains to the SFOBB is beyond the scope of this seismic safety project. An array of reasonable alternatives which address the purpose and need of the East Span Seismic Safety Project was included and analyzed in the Draft EIS; placing trains on the bridge was not part of this array.

Under existing state and federal law, transportation projects are developed consistent with a Regional Transportation Plan (RTP). Under federal law, this RTP must be a fiscally constrained planning document developed by the Metropolitan Planning

Organization (MPO). The Metropolitan Transportation Commission (MTC), the MPO for the Bay Area, has an adopted RTP consistent with federal law. This RTP has a twenty year planning horizon and includes transit enhancements in the Transbay Corridor. The East Span Seismic Safety Project is consistent with MTC's RTP. The ballot measures in your four cities did not modify or amend MTC's RTP.

Senate Bill 60 which was signed into law on August 20, 1997, outlined the funding for the East Span Seismic Safety Project. Senate Bill 60 added section 30604.5 to the Streets and Highways Code which states: "Notwithstanding any other provision of law, local and state permitting authorities shall not impose any requirement that a . . . mass transit facility be constructed on the San Francisco-Oakland Bay Bridge as a condition for issuing any permit, granting any easement, or granting any other form of approval needed, for the construction of a new bridge." This is a clear statement of legislative intent that the project is not a mass transit or rail project and that it focus on seismic safety. The ballot measures in your four cities did not modify or amend existing State law.

Senate Bill 60 also implemented a carefully crafted funding package for the seismic retrofit of all toll bridges in the State of California, including the SFOBB. Reaching a legislative consensus on this funding package was a time-consuming and difficult process. This funding package did not provide for consideration of rail on the SFOBB, and therefore, the State Legislature would have to reconsider its funding decision before anyone could consider incorporating rail into the SFOBB East Span Seismic Safety Project. Given the significant cost associated with rail, undoing the existing consensus would at best significantly delay the current seismic safety project.

Your letter references the interim seismic retrofit of the eastern spans of the SFOBB. It is imperative to clarify the purpose of this project. The purpose of the interim seismic retrofit of the east spans of the SFOBB is to prevent multi-span collapse with the resulting catastrophic loss of life that will result from a moderate, more probable earthquake. The interim seismic retrofit does not provide protection from a large earthquake; that is the purpose of the East Span Seismic Safety Project. After the interim seismic retrofit of the east spans is complete, a maximum credible earthquake will still result in a multi-span collapse of the SFOBB. Therefore, the interim retrofit does not provide sufficient performance to justify postponing the East Span Seismic Safety Project. Delaying the SFOBB East Span Seismic Safety Project would jeopardize public safety. It will risk lives. Therefore we can not delay the East Span Seismic Safety Project.

As part of the planning process for the SFOBB East Span Seismic Safety Project MTC has recommended to the Department of Transportation (Caltrans) its locally desired option. Caltrans and FHWA are the legal decision makers for this project and are fulfilling this role. Due to the pressing public safety risk associated with the existing SFOBB, Caltrans is embarked upon risk design for MTC's locally recommended alternative. Caltrans acknowledges that this risk design may be discarded with the NEPA decision. However, it is

prudent to risk the cost of preparing this design, since it can potentially provide public safety at a much earlier date. This risk design provides flexibility, so future decision makers could easily modify the structure to add light rail. This flexibility is being accomplished by selectively strengthening supporting bridge sections beneath the shoulders of the new bridge. Decision-makers in the future then will have the option of deciding how best to use the space on the new bridge to address the region's transportation challenges.

We believe that it would be prudent to investigate rail options in the Transbay Corridor–separate from the SFOBB East Span Seismic Safety Project. We support the points made in the Metropolitan Transportation Commission's (MTC) letter to you dated December 16, 1998, concerning options to be studied. We wish to work with MTC and the Bay Area community to conduct an analysis of these options.

In the interest of public safety, we will keep the SFOBB East Span Seismic Safety Project on schedule for completion at the earliest possible date. We look forward to working with the Bay Area to complete a rail planning study to facilitate future projects and future decisions.

Sincerely,

JAMES W. VAN LOBEN SELS
Director

December 7, 1998

Mr. James Spering, Chair
Metropolitan Transportation Commission
Joseph P. Bort Metro Center
101 Eighth Street, 3rd Floor
Oakland, CA 94607-4700

Mr. James W. van Loben Sels, Director
Caltrans
P. O. Box 942873
Sacramento, CA 94273

Dear Mr. Spering and Mr. Van Loben Sels,

As you know, over 65 percent of those voting in San Francisco, Oakland, Berkeley, and Emeryville combined have declared that "the Metropolitan Transportation Commission and Caltrans include passenger rail service as part of the redesign of the Bay Bridge in order to reduce regional traffic congestion, promote regional mass transit use, and protect the environment." We accordingly request that you authorize a thorough and comprehensive design and type selection study of the passenger rail service options for the Bridge in order to fulfill the mandate of the voters. While the current design work for the Bridge should cease, the interim retrofit of the Bridge should continue as planned to improve safety.

We are in agreement that the rail study should include: 1) a thorough analysis of the various rail options (light, heavy, BART) for both the new East Bay crossing and the West Bay crossing; 2) an integration of rail into the bridge structure so that it is functionally efficient and aesthetically exceptional; 3) an analysis of long range transportation needs in this corridor; 4) a cost feasibility analysis; 5) viable funding options. The study should be completed within a reasonable length of time so as to not unduly delay the project.

Upon completion of the study, the appropriate alternative and funding plan should be selected and incorporated into the project.

Please join us in making this bridge an international model of safety, transportation excellence, and beauty; truly a world class bridge. The voters expect no less.

Sincerely,

SHIRLEY DEAN
Mayor, City of Berkeley

KEN BUKOWSKI
Mayor, City of Emeryville

ELIHU M. HARRIS
Mayor, City of Oakland

WILLIE L. BROWN, JR.
Mayor, City and County of San Francisco

JERRY BROWN
Mayor-Elect, City of Oakland

c: MTC members
Lawrence Dahms, MTC
Bill Hein, MTC
Denis Mulligan, Caltrans
Brian Marony, Caltrans

**CALTRANS SEISMIC ADVISORY BOARD**

December 30, 1998

The Honorable Barbara Boxer
U.S. Senate
1700 Montgomery Street, Suite 240
San Francisco, CA 94111

**RE: Seismic Safety of the San Francisco-Oakland Bay Bridge**

Dear Senator Boxer:

As members of the Caltrans Seismic Advisory Board (SAB), we would like to direct your attention to a serious and important life safety issue concerning delays in the planning, design, and construction of the new east bay spans of the San Francisco-Oakland Bay Bridge (SFOBB) and we respectfully request your assistance. Since the devastating 1989 Loma Prieta earthquake, the California Department of Transportation (Caltrans) has been working with academia and the private sector to develop an engineering strategy on how to protect the Bay Bridge when the next major earthquake strikes. Thanks to that cooperation, great strides have been made in expanding knowledge and technology applicable to the seismic design of such bridges.

The eight member SAB was constituted by the State of California following the 1989 Loma Prieta earthquake to review and advise Caltrans on seismic safety and policy issues. It was formed as a direct result of the Governor's Board of Inquiry following the 1989 Loma Prieta earthquake and recommendations made by that board in its report "Competing Against Time" enclosed herewith. The members of SAB consist of specialists in seismology, geotechnical engineering, and structural engineering from the practicing earthquake engineering community and academia. The SAB has closely followed and advised Caltrans since the Loma Prieta earthquake on important seismic safety related policy and procedural issues.

In a presentation to the SAB on December 15, 1989 on the status of the new east bay spans of the SFOBB, we were advised about project delays caused by the US Navy refusing to grant permission for soil explorations on and near the tip of Yerba Buena Island which are on the critical path for design completion of the new bridge.

The proposed soil explorations have no impact on any existing structures or facilities. The drilling is critical, however, in providing the technical data needed for the design and construction of a replacement structure along the identified northern alignment.

This northern alignment was arrived at after over three years of project studies by Caltrans and a detailed review by the 35 member Engineering Design Advisory Panel (EDAP) for the Metropolitan Transportation Commission (MTC). MTC, which is the transportation planning organization for the San Francisco Bay Area, has recommended this northern alignment as the best alternative.

The Seismic Advisory Board is very concerned with any delays, short or long, on such an important project to the citizens and economy of California. Such impediments undoubtedly will jeopardize public safety.

We, the members of the Seismic Advisory Board, remain committed to keeping this critical public safety project on track. Therefor, any assistance you can provide toward obtaining the Navy's permission to proceed with the needed soil explorations would be greatly appreciated.

Sincerely yours,

Bruce A. Bolt, Professor Emeritus
University of California, Berkeley

Joseph Nicoletti, Structural Engineer
URS Consultants, San Francisco

John F. Hall, Professor
California Institute of Technology

I.M. Idriss, Professor
University of California, Davis

Alexander C. Scordelis, Professor Emeritus
University of California, Berkeley

Frieder Seible, Professor
University of California, San Diego

F. Robert Preece, President
Preece, Goudie & Issa, San Francisco

Joseph Penzien, Chair SAB
Professor Emeritus
University of California, Berkeley

Enclosure Competing Against Time

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Kenn Parsons, U.S. Navy
James Van Loben Sels, Caltrans
James E. Roberts, Caltrans
Brian H. Maroney, Caltrans
Thomas J. Post, Caltrans
Dennis Mulligan, Dist 4, Caltrans
Steve Heminger, MTC
Gray Davis, CA Governor-Elect